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EDUCATION

Special Sahelian Office

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The education sector

1. The problem

1.1 The last decade has seen a considerable expansion of the educational system of the six countries of the Sahelian region dealt with in this report; between 1960 and 1970 the number of pupils enrolled in primary schools more than doubled in the six countries considered as a whole (362,209 pupils in 1960; 851,297 pupils in 1970); the number of pupils enrolled in secondary, general, technical and teacher-training schools increased fourfold (23,888 pupils in 1960; more than 92,000 pupils in 1970); the number of students receiving higher education rose from 1,391 in 1960 to more than 4,000 in 1970. This is a phenomenon common to the newly independent African States and one from which the six countries of the Sahelian zone have not been exempt. It is generally explained by the desire for education which has taken hold of the populations of those countries and by the belief held by the national leaders that the development of their countries could not be carried out without the prior, or at least concomitant, development of education.

1.2 The substantial rise in school enrolment since 1960 was not achieved without the appearance of some flaws in the educational systems as a whole, considered both on their own merits and in relation to the socio-economic context.

1.3 Since attaining independence, the countries of the Sahelian region have mainly developed formal systems of education, either inherited from their colonial past or very largely inspired by educational systems currently applied in the former metropolitan country. Apart from some very interesting experiments to which reference will be made further on (functional literacy, educational radio, etc.), the development of non-formal systems of education has been relatively limited.

1.4 Another characteristic of the educational systems in the countries of the Sahelian zone that should be noted is the low level of internal effectiveness, that is to say, high rates of repetition of courses (higher than 40 per cent in some classes), and high drop-out rates with the adverse effects this "wastage" may have on the real cost of education (according to the country, the theoretical cost of educating one pupil may be multiplied by two, three, four, five or six as a result of repetition and abandonment of studies). Without entering into the many and varied causes of this situation in detail, we may note some causes that can be traced to the teachers (generally inadequate qualifications), the teaching conditions (structures, curricula and teaching methods are still largely inspired by the former colonial country and do not reflect national conditions; inadequate teaching equipment, etc.), problems of language (the mother tongue is not the same as the language in which instruction is given), and the socio-economic conditions of the country (working conditions of the pupils, existence of nomadism, and so forth).

1.5 The external effectiveness of the educational systems is also low; external effectiveness means the extent to which the educational system meets the needs of the socio-economic and cultural system which it is supposed to serve, both

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quantitatively, i.e., in terms of the number of school-leavers who easily find work and are able to find a place in the society and the economy and contribute to their development, and qualitatively, i.e., in terms of the usefulness of the training received by the "products" of the educational system in enabling them to find a place in the economy and society of their country. This question will be dealt with in greater detail in the section on the relationship between education and economic development.

1.6 Over the past decade, the countries in question have made considerable financial efforts to promote the development of their educational systems. Unit costs vary from one country to another, but are generally very high in relation to average national per capita income. Consequently, the countries of the Sahelian zone seem to have reached the limit of the financial efforts they can make to ensure the development of their educational systems. As is clearly shown by the attached tables concerning primary school enrolment, there was a substantial rise in enrolment at the primary level between 1960 and 1965 (with an average annual growth rate of up to 17 and 18 per cent in Chad, the Niger and Mali); there was a much smaller rise between 1965 and 1970 (the highest rate of increase being 9 per cent for Mauritania, and the lowest 0.8 per cent for Chad), which clearly shows that most of the six countries have practically exhausted their financial potential and that it will be very difficult to secure additional funds from national sources for the development of education, the introduction of reforms or the implementation of new projects.

1.7 The attached tables show a disturbing situation in that the education systems reach only a minority of the children of school age (the net school enrolment rates for children of school age at the primary level in 1970 range from 10 to 20 per cent, with the exception of Senegal, which had a rate of 33 per cent), and in that the rise in school enrolment appears to have lost its momentum because of a lack of financial resources, high unit costs, large-scale nomadism and the existence of illiteracy among broad sections of the adult population. Without far-reaching reforms, the best that can be hoped for is that education will reach the majority in these countries by the end of this century. Universal primary education would still be a remote prospect.

1.8 For example, of all the countries in this group, Mali currently has the highest rate of educational expansion (if one takes account solely of the rates of increase in enrolment). Assuming that the annual average rate of increase in primary enrolment is maintained at 6.5 per cent, that the proportion of school-children between the ages of 7 and 12 is maintained at 72.7 per cent and that the annual average rate of increase of the 7-12 age group of the population is 2.8 per cent, one obtains the following net primary school attendance rates: 1970: 19 per cent; 1980: 27 per cent; 1990: 38 per cent; 2000: 54 per cent. The financial burden of such systems is very heavy, in spite of substantial foreign assistance.

1.9 The imbalances referred to above are not of the same order of magnitude in each of the countries, as the attached tables show, and the remedies already applied or which need to be devised also differ in many respects. The national authorities are aware of the problems posed by the defects noted in the functioning of their

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education systems. Thus, many reforms have already been introduced with a view to breaking away from the pattern inherited from the colonial past, reforms relating not only to the duration and structure of the various stages of education but also to curricula, methods, teacher training and the location of schools. The reform of primary education in Mali, the rural education centres in the Upper Volta, the educational television and radio in the Niger, the reform of curricula in a number of countries and teaching in national languages are only a few examples of this obvious desire for change.

2. Relationship between education and the economy

2.1 It has become commonplace to assert that the development of education should not be an end in itself but should facilitate economic growth and promote the fulfilment of the individual.

2.2 In the foregoing paragraphs we have seen how high the cost of education is and what financial efforts the countries of the Sahelian zone were obliged to make in order to raise or merely maintain the current level of school attendance. However, no attempt has yet been made to evaluate the economic benefits of expenditures on education. Should such expenditures be considered as mere consumer spending or do they represent an investment for the benefit of economic growth?

2.3 The only information currently available for an evaluation of the relationship between education and the economy consists of general data on the degree of ease with which the 'products' of the education systems find a place in the economic structures of their country.

2.4 Although a large number of jobs continue to be occupied by foreigners, particularly in the private sector, the number of school graduates produced by the education systems is sufficient to meet the demand for labour, except in certain very restricted fields. On the other hand, more and more school-leavers at various educational levels are not finding employment: the school systems seem to be expanding much more rapidly than the economy and the rate at which new jobs are created is much lower than the rate of output of school graduates, so that there is a growing number of young people without special qualifications who are unemployed.

2.5 It must be acknowledged that school-leavers and graduates in the Sahelian countries, as in other countries, are mainly trained for salaried employment in the modern sector, their preference being for the public sector because of the advantages offered, particularly as regards stability of employment. The modern sector, however, represents only a minute proportion of national activities. Generally speaking, each stage of education is designed to train pupils academically for the stage above, and so on up to the apex of the system; pupils are relatively ill prepared for entry into active life in general and for a return to the traditional environment in particular. Only very seldom does each stage of education fulfil the dual purpose of:

preparing pupils for absorption into the socio-economic life of the country when they complete a particular stage;

training the better pupils for the stage of education immediately above.

2.6 Pupils who have completed one stage of education and who are to enter active employment are very often at a disadvantage in finding a place in the economic and social structure of their country; in search of salaried employment they leave the rural areas, thus helping to deprive the countryside of the best resources that could contribute to its development.

Very often they have no specific occupational skills and can therefore take only the few salaried jobs which do not require very specialized qualifications or in which at any rate their productivity will remain at quite low levels; most of them come to the towns to swell the ranks of the unemployed and remain dependent on a member of their family, thus representing dead weight for society and the economy.

2.7 It is of course essential that the education systems should satisfy the labour needs of the modern sector, the growth of which will inevitably have a consequential impact on the general development of the countries. Far-reaching and rapid development is not, however, conceivable without the development of the traditional sector, which in some cases accounts for more than 90 per cent of the employed active population.

2.8 Accordingly it is very important - and the national authorities of the Sahelian countries are anxious to do this - to evaluate the teaching and training requirements for independent workers in the modern sector, as well as the needs of the traditional sector with a view to ensuring its rapid progress towards development, and it is also important that the education systems should be geared to those requirements and no longer train pupils only for salaried employment. This should be the aim of the efforts to modernize formal systems of education that are being made in most of the countries under consideration, as well as of the projects for the development of non-formal education instituted some years ago, efforts and projects for which UNESCO has provided and in some cases is continuing to provide assistance.

3. Past achievements

3.1 The attached tables provide basic information on the rise in school attendance in each of the six countries under consideration over the past decade (enrolment in primary schools, general secondary schools, technical schools, teacher-training schools and higher education establishments; school attendance rates achieved; rise in the number of pupils enrolled in the first year of primary education, etc.).

3.2 Over the last 10 years, UNESCO has provided assistance to the six countries of the Sahelian zone through UNDP, IBRD and UNICEF projects, with the following two main objectives in view:

- To help States in the modernization of formal education systems (training a new type of teacher better able to cope with local needs (Niger); studying the reform of the structure and the definition of the content of the average educational programme (Senegal); establishment of rural education centres (Upper Volta), and use of mass media (Niger, Senegal) etc.);

- To help States to develop non-formal education systems (functional literacy in Mali; educational radio in rural areas in Senegal; see the annexes for information on how these projects were devised and implemented and the promising results achieved with their help).

3.3 From the achievements of the past 10 years, it can be seen that the innovations which, over the medium term, could change education systems to enable them to respond more effectively to the problems of development, are already taking shape. Such innovations include modifications of curricula (natural sciences, biology, chemistry, geography, etc., different elements in the over-all study of the environment) which should be geared to solving the problems of the environment and its future; the promotion of primary schools as local centres of development activity in which the primary school-teacher would play a leading role; the more systematic use of mass media or of audio-visual techniques in educational institutions; and the development of experiments in non-formal education and interpretation of the objectives pursued and the resources employed in formal and non-formal education systems.

4. Future objectives

4.1. While the material resources alone are insufficient to ensure development, the human resources cannot by themselves ensure economic growth. The sole but essential objective to be established for the development of education in the six countries of the Sahelian zone should be the quest for improved and continual adaptation of educational systems to meet economic, social and cultural development needs. Apart from efforts to achieve the modernization of educational systems, one possible means of achieving that end is to identify and activate the educational components of each development project; this would be a means of better integrating education into development and would provide an opportunity to devise and use updated educational programmes and methods which could be applied to formal education systems and facilitate their development.

4.2 The development projects in the Sahelian zone (irrigation, reafforestation, improvement of grazing land and livestock, etc.) will have no impact on the population unless the population receives, in good time and according to a rational sequence, the educational messages which will enable it to assume true responsibility for technological, economic and social progress (see the annexed document concerning the possibility of including functional literacy in a rural development project in Chad).

4.3 Consequently UNESCO intends that its assistance in support of the efforts currently being made by the Sahelian countries should serve a dual purpose:

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Firstly, the educational component of each development project will assure that project of a measure of success over the short and medium term;

Secondly, over the longer term, the educational programmes and methods used in these development projects will have modernizing and multiplier effects on the formal educational systems.

4.4 The new system of education must be organized so as to enable it to break free of the constraints which have been gradually imposed upon it by institutions, programmes and methods. The special programme of action in favour of the countries in the Sahelian zone should, if it accords sufficient importance to education, make a substantial contribution to the rethinking of the role of education, of the forms which it should take and of the resources to be allocated to it.

4.5 The cultural requirements of such directly development-related action are of vital importance and can be met only if the education-training component of each project is actually tailored to local conditions. The transformation of the environment can in no case consist of a series of purely technical activities, it must take account of the underlying values of the society in which it occurs.

5. Types of action proposed for the implementation of the educational components of development projects

5.11 Three types of educational action seem appropriate to the programme of the Interstate Committee of the drought-stricken countries as at present contemplated:

(a) Education, training, or group leadership programmes in which a local development project (dams, wells, pasturelands, co-operatives and so on) drawing them together provides a focal point for specific action for the population groups concerned, through programmes designed for particular purposes. (See annex I for an example of functional training, annex III for an example of costing, and annex IV for the methodology of preparing training programmes.)

(b) Education programmes arranged through institutions which organize production or marketing (co-operatives, agricultural clubs) or social and cultural activities. By the way in which they stimulate work and leisure activities, these institutions have an educational impact varying in scope and specificity, according to the purpose involved:

(c) Periodic or regular transmission by mass media (radio, rural press) of educational programmes to stimulate the public, through modulation and repetition of messages (an example is given in annex II).

5.12 These types of action must be integrated into socio-cultural behaviour patterns and local exchange and communication networks (family and community education, local councils, traditional hierarchy and so on). They also entail mobilizing for education work persons, goods and services involved in other production or service activities (agricultural extension workers, heads of co-operatives, weighers, male nurses, veterinarians, etc.).

5.13 Voluntary action for education at this level must use and activate existing networks and institutions or spontaneous forms of organization. It must, at the very least, entail defining objectives and supervising educational message and its impact. It may in certain cases lead to the establishment of an independent organization for educational projects, but only in so far as the development project has reached a stage requiring intensive action and does not already propose the requisite instruments (as for example in (b) above).

5.2 Participation by the population

5.21 The public must participate actively in each stage of planning and implementing educational programmes. It will be necessary to hold discussions on questions vital to the population, to reach a consensus and to find the most dynamic leaders and innovators who can be the mainstay of subsequent operations.

5.22 The mobilization of educational resources involves the intensive participation of the grass-roots communities as a whole and not only the traditional or educated élite.

5.23 In fact, the educational segments of development projects should be handled by the local population with minimum backing from the central authorities and foreign experts. The technical assistance effort should concentrate on maintaining consistency between education and development, both in training instructors and in providing technical and methodological back-stopping. Provision should also be made for the gradual handing over to trained producers of functions initially carried out by paid project officials, so that eventually supervision will be exercised by local staff.

5.24 This participation is particularly necessary since it is the only guarantee of cultural support for the project, with groups and individuals pinning their hopes on it and translating the technical input into terms reflecting their own set of values.

5.3 List of facilities required for the implementation of the education programme

5.31 The preparation of such a list presupposes prior knowledge of:

(a) The time-table and implementation stages of the project itself and particularly the number of farmers reached each year by extension activities, the annual number of remunerated extension workers, other equipment required each year for the project: e.g. storage space, administrative supplies;

(b) The general plan for the transfer of knowledge and of responsibilities mentioned above.

It is therefore essential that the various technical and educational components of a project should be studied at the same time, since the various elements are closely interrelated.

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5.32 As an indication, for each heading, reference should be made to the possible need for the following equipment and supplies:

- Transportation for field surveys, consciousness-raising among producers, training and refresher courses, distribution of teaching material (pamphlets, films, exhibitions), support for teachers, inspection and appraisal.

- Machinery, apparatus and supplies for making teaching material of the quality, diversity and quantity required for curricula, for both producers and instructors.

- Demonstration instruments (e.g. scales, weighing machines) or communications instruments (e.g. radio receivers).

- "School" material not likely to be manufactured locally (pencils, notebooks, chalk, slate-paint, etc.) and lighting where applicable.

- Food-stuffs likely to be supplied by WFP for training sessions or some possible forms of incentive for instructors or adults.

5.33 Buildings may be needed, if they do not already exist:

- For villages: accomodation, if necessary, for courses and equipment.

- For groups of villages (canton, or co-operative 'district', or co-operative association, etc.): accomodation, if necessary, for teacher-training or refresher training courses, workshops or various meetings.

- For districts, officials engaged in field research, training, back-stopping and monitoring of operations would require an office, storage for teaching material, possibly a small maintenance and repair or reproduction workshop.

- For officials engaged in the planning, organization and management of operations: offices and garages, workshops for manufacturing teaching material, reproduction, storage, accounting or appraisal, basic and refresher training.

5.34 Staff must be provided for:

- The basic and refresher training of instructors, distribution of material, support for centres opened and monitoring of their operations, information and consciousness-raising for groups included in the project, information and training of project officials not directly involved in training activities;

- The basic and refresher training of officials at every level and with every specialty, field surveys, campaign planning, drawing up of curricula, design and manufacture of teaching material, management, distribution, organization of work, supervision of implementation, appraisal.

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For all categories of staff required, facilities for refresher training and updating must be provided on an ongoing basis.

5.4 Administrative structures

5.41 The administrative structures for educational action and objectives within the project must be chosen in the light of the structures planned for the project as a whole; but, conversely, the structures of the project as a whole must be planned in the light of both the training function, in which all project officials must be involved, and the new possibilities provided by the existence of trained producers.

5.42 In any case, there must be within the project administrative machinery geared to education and training operations.

ANNEXES

Some examples of education/training components in development projects - examples of costing and methodology

UNESCO already has considerable experience in this field, and some conclusions may be drawn with regard to the transfer and adaptation of this experience to other contexts.

On the following pages will be found two brief accounts of

- functional literacy training (the example of Mali) 1/ (annex I)

- rural radio in Senegal (annex II)

These are simply examples of achievements which the Interstate Committee might bear in mind, while taking into account the specific needs of each situation and each development project. The importance of these examples is methodological.

A model budget (annex III), taken from a report on the feasibility of introducing functional literacy training in a rural development project in Chad, is given by way of reference. It provides for two possible solutions (minimum and maximum) and gives an idea of the costs of such operations.

Annex IV gives a methodology for the formulation of training sequences in rural development projects where new techniques and skills are to be introduced and appropriate training programmes prepared.

Lastly, a set of eight tables give basic figures on the educational situation in each of the six Sahelian countries.

1/ See also L'alphabétisation fonctionnelle au Mali. B. Dumont, UNESCO, 1973.

ANNEX I. FUNCTIONAL LITERACY PILOT PROJECT IN MALI

Functional literacy training is selective because it is primarily intended for those producers whose activity is most useful to economic development and thus yields a profit. The project concerns major development operations in the agricultural sector (cotton, ground-nuts and rice) and the main State companies and enterprises. Thus, in the rural sector, after four years of experience, functional literacy has now become a component of major agricultural operations. Through these operations, young farmers gradually succeed in assimilating increasingly complex techniques, such as the use of draught animals, the use of more complex equipment, the use of fertilizers, insecticides and fungicides and the gradual assumption of certain policy-making or supervisory functions which have hitherto been the responsibility of official personnel. The ultimate adoption of each of these practices by farmers depends on the success of the first attempts but may, to a large extent, be facilitated and accelerated by raising the farmers' level of comprehension. These practices presuppose not only a precise knowledge of the acts to be carried out but also a rational understanding of the reasons and conditions for their application and an ability to make forecasts by means of occupational arithmetic and the preservation of written documents.

It may thus be said that the purpose of functional literacy training, in every socio-economic sector, is to develop not only the technical and professional skills of producers but also their faculty of intellectual analysis and their ability to communicate, with a view to helping them to adapt to the conditions resulting from the change in which their participation is required.

On the basis of this consideration and taking into account the diversity of socio-occupational sectors (in industry and agriculture alike), the intensive character of functional literacy training is easy to understand. It is therefore not possible to apply a standard programme in this context; rather, what is required is training "made to measure" for each socio-occupational milieu. (There are 15 different programmes in Mali.) This brings us to the "problem" approach to functional literacy training.

Any functional literacy programme must have as its starting-point a study of local conditions which makes it possible to identify and to place in order of priority, in the light of objectives, those problems which create a bottle-neck in the development process. These problems are technico-occupational, socio-economic and intellectual and concern both health and safety.

After analysis, they are transformed into programme elements grouped together in "sequences". Each problem is represented by a problem-label.

In view of the diversity of the problems and their solutions, it is essential that the team responsible for the study of local conditions, the preparation of programmes, execution and supervision should be interdisciplinary and collaborate closely with the officials responsible for the sector concerned. Participation is a key factor in functional literacy training.

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The preparation of teaching materials must always be based on the principle of convergent integration.

The training theme must correspond to local production activities:

- Vertical integration (example: the situation of thinning-out in relation to past and future cultural operations).

- Horizontal integration (all the various kinds of problems relating to thinning-out).

The training theme should also be integrated with:

- The practical and theoretical activities (practical sessions in the field and mental recapitulation sessions).

- The various intellectualization activities.

It is from the occupational situation that the reading, writing and occupational arithmetic elements are derived.

In the functional literacy training, reading, writing and arithmetic are not objectives in themselves.

The purpose of reading and writing is to facilitate the transmission of information to and the occupational training of farmers by means of access to the written message resulting from a technico-occupational situation. It makes it possible to acquire a gradual awareness of the role played by words in the key-sentence which constitutes the conclusion of the occupational or socio-economic training session. The purpose of occupational arithmetic is to help farmers to resolve an occupational or socio-economic training problem arising out of a given situation. It is a tool in the service of the producer and should bring together all the elements of the training given.

In the matter of teaching materials, the functional literacy training method accords great importance to illustration, which plays an essential role in the process of problem analysis and comprehension. The collective label (drawing, diagram or photograph) helps in the collective identification of problems and their solutions. It also provides a link between the concrete (field demonstration by operational staff) and the abstract (letters and figures). In addition to the label, the teaching materials comprise:

- Occupational and socio-economic training cards;

- Individual documents for the teaching of the elements of arithmetic, reading and writing in Bambara, facilitating comprehension, estimation and memorization in relation to the practice presented;

- Practical materials, which may be common to several sequences and constitute, par excellence, the instrument for introduction to or mastery of the practices proposed:

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Time-table for ground-nut and cotton producers,

Work record book,

Wall poster (tool broken down into its component parts),

Technical memorandum,

Still or moving demonstration film (in Bambara),

The radio programme "Learning for Better Production".

The purpose of this "intellectualization" is to increase the amount of thought given by the producer to the technical changes which it is desired to introduce in his daily practice. It acts by enriching and transforming the personality, making it possible to effect changes and broaden the scope of the development of the individual and the community.

Organization and results

The functional literacy courses, which take place in the villages, are conducted by voluntary group leaders assisted by a functional literacy committee composed of influential members of the village population.

The literacy training centres are built and equipped from local materials by the villagers. They are very simple and very well adapted to village conditions.

The group leaders (operation supervisors and literate farmers) receive training which enables them to utilize effectively the functional literacy teaching materials produced by the National Centre and distributed by the regional authorities.

Functional literacy training is currently under way in five out of six regions in Mali, with 1,729 centres attended by 69,160 students.

Among the students, encouraging progress may be noted. Thus, in the Ségou and Kita regions, many formerly illiterate farmers are now capable of teaching other farmers and sending orders for spare parts in writing. In these regions, the use of scales no longer presents any problems. As proof of the functionality of the programme, we may cite the fact that those attending some centres in Kita include school-leavers who, after six years of schooling, are attending the literacy training courses in order to learn not how to read and write, but how to use scales, fertilizers, fungicides and insecticides, etc.

The use of the mother tongue is actually the most decisive innovative factor in the results obtained. The mother tongue is the most effective and most suitable tool for a functional literacy programme designed to give farmers comprehensive training.

Lastly, at all levels of the process of functional literacy training, emphasis is placed on adaptation to local conditions, selectivity and a "problem" approach. Thus, we have observed that, when a problem which is a major concern of farmers is

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resolved in all its aspects - occupational training, socio-economic training, reading, writing and occupational arithmetic - the degree of interest which it arouses in them inevitably leads to their active participation in the adoption of the solution to the problem.

In the light of all these results, it may be said that this functional literacy training method could serve as a basis for primary education for the young.

ANNEX II. THE EDUCATIONAL RADIO EXPERIMENT IN RURAL AREAS IN SENEGAL

1. Educational radio and the conditions for rural development in Senegal

Senegal is one of the main producers of ground-nuts. The importance of this industrial crop, on which two thirds of the national economy depends, explains the drive since independence to reorganize rural life in order to achieve a steady increase in production.

Thus, well before the introduction of educational radio, many services operated in the field. They were of two kinds: first, the rural community development departments, for which modernization signified first and foremost putting an end to man's alienation by the awakening, organizing and training of individuals for participation in their own development and in the running of agencies concerned with production and administration (co-operatives and rural communities). 1/ Secondly, there were also a number of technical companies, which were concerned more especially with agricultural extension and the modernization of rural life. These companies, some of foreign origin, were mostly interested in concepts of efficiency and profitability.

Definite progress was achieved for a number of years while these various trends were in balance. However, difficulties then appeared that obstructed the harmonization and co-ordination of the efforts undertaken by these various services, 2/ and a certain amount of confusion in the field sometimes resulted; this gradually discouraged the people, even though they were very receptive to progress.

However, the main obstacles to these modernization efforts over a four-year period were an exceptionally long drought and a sudden steep drop in the price of ground-nuts, which created a somewhat gloomy outlook for Senegalese agriculture.

Educational radio made its début amidst all these difficulties and, from the outset, proved to be an extraordinarily powerful means of expression for the rural population, which discovered in it a truly unique instrument for expressing its views and drawing attention to its problems. Thus, in the initial phase, educational radio served first and foremost as a catalyst for what was later called the "rural unrest".

At the same time, however, radio played a no less important role as an accelerator by revealing publicly the full scope of the problem of "rural unrest". It thus brought about an awareness, understanding and probing of the difficulties of rural life.

1/ Statement by the Director of Rural Community Development at the Seminar on use of mass media for rural development, held at Dakar and Kaolack (Senegal) in December 1970.

2/ Ibid.

Lastly, having aroused the reactions essential to the finding of solutions, it became a magnificent instrument for both the "animation" of the farmers and the monitoring of official activities.

At this level, radio went far beyond its normal role of imparting information and became a genuine medium for dialogue and participation. Its direct and massive influence in the field helped to re-establish, to broaden and above all to create possibilities for communication, thereby helping to transform working relationships in rural areas; for what was really at stake was less the modernization of agriculture than the way in which that modernization was brought about.

Thus radio became the instrument of a novel policy of unification which, by restoring farmers' confidence, paved the way for further technical progress. It was able on its own, thanks to the originality and power of its message, to achieve rapid and far-reaching results.

2. Basic principles of educational radio

In Senegal, educational radio was designed to act as a channel of communication between the listeners and the programme producers, that is to say, between the rural population, on the one hand, and the official administrative and technical departments on the other. For that reason, special attention had to be given to problems of production, reception, and feedback so as to create conditions conducive to dialogue. It is thus in these three areas - production, reception and feedback - that we may seek the basic principles of educational radio.

Production

If radio is to be an instrument for dialogue and progress, it is essential in the first place that the programmes should reflect both national development policy and the concerns of the rural audience. Educational radio is therefore possible only if it is based on close and uninterrupted collaboration between the main Ministries or departments dealing with rural affairs and the information agencies. This collaboration is the first prerequisite for educational radio.

Reception

If it is to have an impact locally, educational broadcasting requires an attentive audience; listening conditions are therefore very important. In particular, it is important to be able to alter some current attitudes among the public towards the mass media: an over-passive attitude should be rapidly transformed into an active, thoughtful and critical attitude. Where this can be done, educational broadcasting will fully achieve its goal.

Feedback

It is essential to be able to shape and adapt programmes regularly to reflect the views and wishes of listeners. In order to do this, it is necessary to develop

a channel of communication between producers and users - an essential feature of any sound educational activity. In particular, it is important to ensure that audience reactions get back to the broadcaster.

This, then, is the foundation on which educational radio has gradually been built up in Senegal. At no stage has it been necessary to establish complex structures or to spend large sums of money. On the contrary, in Senegal as in many other countries, a number of constituent elements were already in existence. In fact, the main requirement has usually been to rationalize and co-ordinate the use of these constituent elements so as to develop a more coherent system to promote rural development.

3. Listening arrangements and dialogue

The listening group

Educational radio is designed not simply to be listened to, but rather to stimulate thought and reaction on the part of the audience. Yet, at the village level, it is often found that it is unusual for a person to stop all other activities in order to listen quietly to the radio. If educational radio is to be effective, listening conditions are very important and it is of particular note that no sound educational gains can be achieved when the audience consists of individuals.

Accordingly, with the consent of the rural population, listening groups were set up, in about 50 villages in the first instance, for purposes of research and evaluation. Later hundreds of other villages throughout Senegal established their own listening structures. This very simple system of reception centres served as a system of active centres for reflection, discussion or confrontation of opinion vis-à-vis the radio - a system which in turn opened up the way for animation and action.

Radio at this level fitted perfectly into the structures developed by the various official departments, particularly the department concerned with rural community development, whose activities it supplemented and expanded.

It was essential that the listening group should not be an artificial and complex creation; it should remain a democratic assembly, representative of the village, and should, with the assistance of radio, pave the way for the better use of the resources and development potential of the entire community.

The membership and operation of the listening groups (about 30 people making their own arrangements under the guidance of a leader elected by the villagers) therefore have not at any stage required special financial or material resources. The physical arrangements for listening have always been taken care of voluntarily by the villagers.

Listeners' reports

As a result, there emerged real possibilities for dialogue, which is an essential feature of educational radio; this was the final stage of the operation. Generally speaking, it is very important for radio programmes to be geared to the tastes and needs of the audience; this becomes crucial in the case of educational programmes. Since the listening groups were intended as centres of thought and action, they had to be given the opportunity of expressing their views. This permanent exchange between radio producers and users has been developed in Senegal principally through listeners' reports in either Wolof or French addressed to the Central Department by all the villages which listened to the educational broadcasts.

These listeners' reports not only revealed the type of audience reached and the influence of educational radio, but also enabled the Interministerial Programme Board to select programme topics which would best meet the needs of the village inhabitants. Apart from this channel of communication, the continuous exchange of views has been developed in other ways, which have brought to the surface listener opinions and reactions in an even swifter and more lively manner. Thus, the surveys carried out by the evaluation staff and the numerous sound recordings made during tours by specialists in educational broadcasting have made it possible, quite simply, for the rural population to air their views directly and thus explain their problems publicly, over the air, and in return receive the answers of top-level officials.

ANNEX III. EXAMPLE OF COSTING BASED ON DIFFERENT HYPOTHESES

Study of the possibility of including functional literacy in a rural development project in one of the countries of the Sahelian zone (Chad)

(Extract from the feasibility report)

The aim was to include a functional literacy component in a project being executed by another agency, with a view to promoting the general development of the region through the introduction of modern agricultural techniques, the extension of the market economy and the organization of a suitable credit scheme. In order to ensure the participation of the population, special emphasis was laid on the training of rural leaders, as well as of extension workers and marketing agents, and on the establishment of pre-co-operative groups.

The literacy courses, which would begin only after an initial period of consciousness-raising will have to be given in Arabic, the vernacular tongue, but should provide early opportunities for learning reading and writing in French.

(a) Minimum hypothesis

If, in order to take into account external pressures and actual possibilities for action, the objectives and scope of the project are redefined from February 1973 onwards, bringing them back to reasonable proportions and, as a result, reducing the international staff involved to a level compatible with such a restricted, though realistic, project, it would be possible to lay the foundations for a genuine functional literacy programme: in addition to continuing the consciousness-raising recommended for the immediate future, this solution should involve more advanced training for all the trainee farmers in the next agricultural campaign (these trainees should of course, be recruited exclusively in areas where it is possible to support their action following the period of probation, and their programme of training and work should involve products reasonably likely to bring them increased revenues in their villages of origin). This more advanced training should include elementary instruction in arithmetic and written communication, which the farmers need in order to study thoroughly, retain and adequately follow up the advice disseminated by the extension workers. It should also involve preparation for the role of community leader, who should be capable not only of transmitting knowledge but also of organizing groups which, with his assistance and support from the project, would be able to take over their own training.

Such an approach should involve a phase of conscious experimentation lasting at least two years and including:

- An agricultural campaign for the training of rural leaders;

- A second agricultural campaign for the practical application and dissemination of their knowledge;

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- Periods of retraining or advanced training in matters or techniques which experience shows to have been insufficiently covered during the basic training.

The instruments for carrying out such an experiment successfully should remain modest.

The most decisive instruments can hardly be expressed in terms of experts; what is required is:

- A clear view of the aims to be achieved;

- Flexibility and simplicity in the means to be employed;

- A clear awareness, among international experts and national authorities, that the functional training of farmers is not a "preserve" of specialists (even though a specialist may be most helpful), but can only result from teamwork by all the instructors and persons responsible for the project. For that purpose, it is necessary to organize on the spot a programme of consciousness-raising/training in the form of one or several "operational seminars" involving the principal agents and persons responsible for the rural development operation.

If these instruments are assembled, implementation of the contemplated functional literacy campaign would require:

- $30,000 - 12 months for an expert consultant on functional literacy (6 months per year);

- $20,000 - Duplicating equipment (typewriters, reproduction machinery, photographic material and serigraphy), paper and supplies;

- $20,000 - Training to be carried out partly by means of operational seminars and partly in the form of study trips to other African countries by higher-echelon workers from Chad;

- $10,000 - Funds for illustration or printing work.

This would give a total of less than $100,000 over a two-year period for the functional literacy component.

(b) Maximum hypothesis

The functional literacy efforts might be aimed at reaching within 10 years' time approximately 100,000 adult producers ranging from 15 to 35 years of age (an average of approximately one producer per holding, or one in five inhabitants). The over-all cost of such a functional literacy component would be approximately 800 million francs (CFA, of which 300 million would be provided in kind through the voluntary participation of the people, 200 million from the State budget (an average of 20 million per year) mainly for the salaries of its officials,

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and the remainder (300 million francs CFA, or $1.2 million) would have to be obtained from foreign aid; 500 million francs would be required for the first four years within the framework of the project.

Expert (116 months)	$340,000
48 months for an expert in functional literacy	
48 months for an expert in illustration and reproduction	
20 months for consultants (linguistics, assessment, films)	
Training	
Operational seminars, training and retraining	$ 30,000
Equipment and provision of printing, illustration and audio-visual supplies	$120,000
Miscellaneous working expenses and contingencies	$ 10,000

These two hypotheses are not mutually exclusive. On the contrary, the first might be regarded as an experimental phase. The expected results of the two phases differ not only from the point of view of the scope of the effort but also from that of the number of persons reached.

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ANNEX IV. METHODOLOGY FOR THE FORMULATION OF TRAINING SEQUENCES

These sequences reflect the problems to be tackled in the course of the project (hydrology, pasture land, dams, etc.), taking into account the integration of objectives and their hierarchy. For example, a pastoral well will be related to the organization of pasture land and the rationalization of its use; a new plantation will require technical equipment (drying and hulling machines, etc.), a marketing campaign, etc.

Where development requirements take the same forms, the educational sequence may be similar. The parts of a territory whose development depends on the same sequence of priorities constitute an area in which the training method used will be roughly the same.

The first methodological stage therefore consists in finding the logical connexions between the technical activities involved in the development project.

There can be no question of teaching a movement or a process without at the same time explaining its raison d'être. This is technical training based on the use of a tool or a technique (the pulley, the bucket wheel, the water-level, etc.), with care being taken not only to create the right attitude, but also to awaken the imagination, to make comparisons and to try out new combinations. The application chosen is both a necessary aspect of development and an incentive for reflection, the word "technology" being understood to mean reflection on techniques, in other words, open-mindedness, development of rational mechanisms and reflection on techniques already in use.

The second stage consists in establishing programme progressions linking consciousness-raising, training and action on the basis of an examination of the project's technical sequences. The algorithm 1/ below is a good example of the wealth and progression of technological elements.

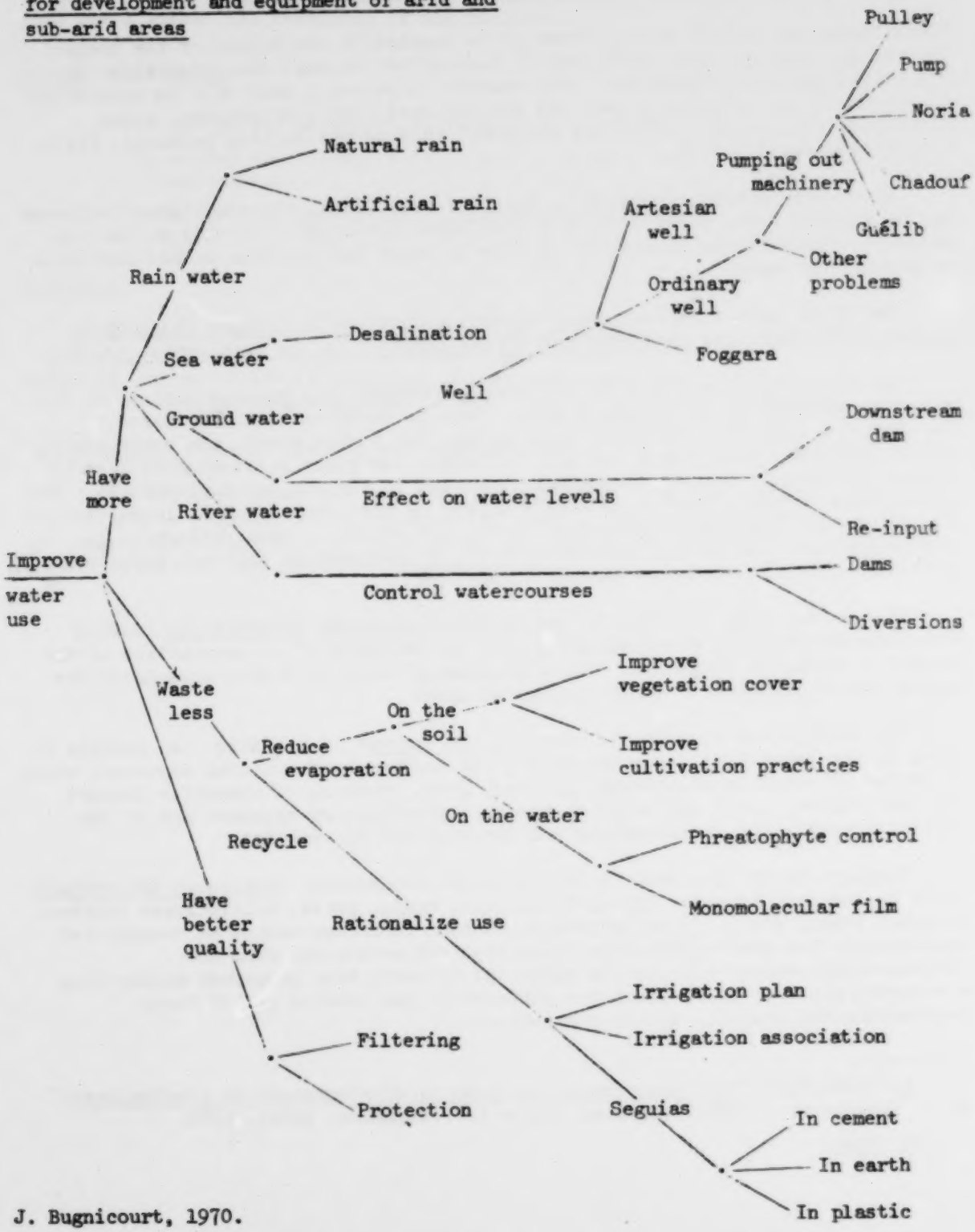
The third stage consists in defining the content of training. An example is given in the network 2/ below concerning the coffee-cocoa training sequence, which is varied in educational content (literacy work, training of community leaders and supervisors, etc.) and based on the multidisciplinary approach and on the skills necessary for understanding and carrying out the project.

Finally, there is a need to determine the educational techniques and methods suitable for each sequence (group techniques, radio, press, multipurpose centres, literacy teams, etc.), it being understood that knowledge cannot be transmitted academically but must result from collective reflection and from an "intellectualization" of concepts which had hitherto been perceived mainly from a concrete point of view, under the guidance of the leaders and of those responsible for training within the project.

1/ Taken from "Une Formation-Action pour le développement et l'aménagement" by J. Bugnicourt - UNESCO Regional Office for Education, Dakar, 1972.

2/ Idem.

- Ideas for a priority technological sequence for development and equipment of arid and sub-arid areas



J. Bugnicourt, 1970.

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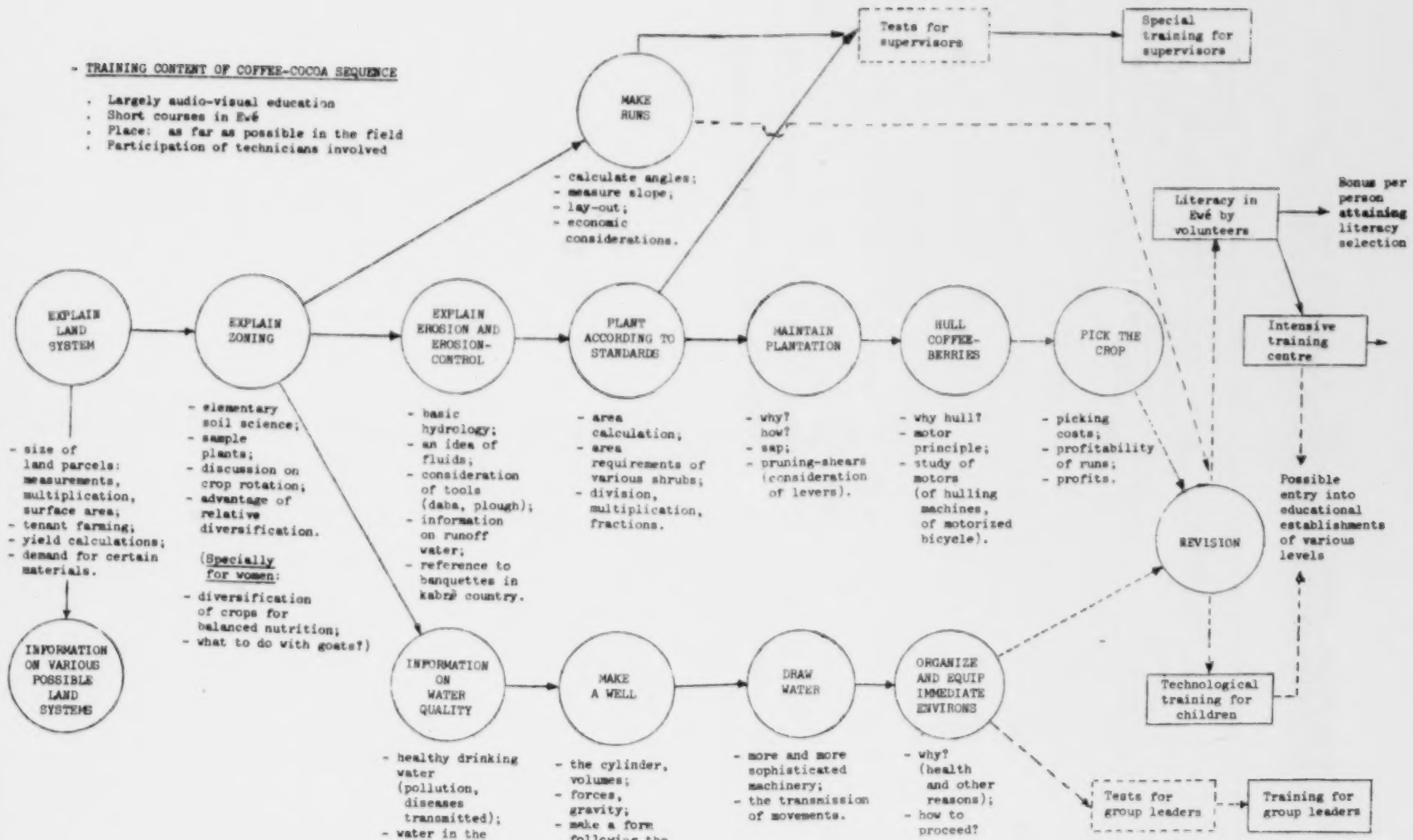
- TRAINING CONTENT OF COFFEE-COCOA SEQUENCE
. Largely audio-visual education
. Short courses in Ewé
. Place: as far as possible in the field
. Participation of technicians involved
EXPLAIN LAND SYSTEM
- size of land parcels: measurements, multiplication, surface area;
- tenant farming;
- yield calculations;
- demand for certain materials.
INFORMATION ON VARIOUS POSSIBLE LAND SYSTEMS
EXPLAIN ZONING
- elementary soil science;
- sample plants;
- discussion on crop rotation;
- advantage of relative diversification.
(Specially for women:
- diversification of crops for balanced nutrition;
- what to do with goats?)
MAKE RUNS
- calculate angles;
- measure slope;
- lay-out;
- economic considerations.
Tests for supervisors
Special training for supervisors
EXPLAIN EROSION AND EROSION-CONTROL
- basic hydrology;
- an idea of fluids;
- consideration of tools (daba, plough);
- information on runoff water;
- reference to banquettes in kabré country.
INFORMATION ON WATER QUALITY
- healthy drinking water (pollution, diseases transmitted);
- water in the well, in the home.
PLANT ACCORDING TO STANDARDS
- area calculation;
- area requirements of various shrubs;
- division, multiplication, fractions.
MAKE A WELL
- the cylinder, volumes;
- forces, gravity;
- make a form following the instructions of well-makers.
MAINTAIN PLANTATION
- why? how?
- sap;
- pruning-shears (consideration of levers).
DRAW WATER
- more and more sophisticated machinery;
- the transmission of movements.
HULL COFFEE-BERRIES
- why hull?
- motor principle;
- study of motors (of hulling machines, of motorized bicycle).
ORGANIZE AND EQUIP IMMEDIATE ENVIRONS
- why? (health and other reasons);
- how to proceed?
PICK THE CROP
- picking costs;
- profitability of runs;
- profits.
Literacy in Ewé by volunteers
Bonus per person attaining literacy selection
Intensive training centre
REVISION
Possible entry into educational establishments of various levels
Technological training for children
Tests for group leaders
Training for group leaders
J. BUGNICOURT, 1972

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Table A_1 - Population, growth (1960-1970) and density per km^2 (1970) per capita GNP (1970) and GNP growth rate (1960-1970)

Country	Population		Per capita GNP	
	growth as a %	density	in U.S. dollars	growth rate
Mali	2.1	4	70	4.4
Mauritania	1.9	1	140	4.5
Niger	2.9	3	90	2.0
Senegal	2.1	20	230	0.0
Chad	1.8	3	80	0.4
Upper Volta	2.1	20	60	0.6

Source: IBRD - Trends in Developing Countries 1973; World Bank Atlas, 1973.

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Table A_2 - Primary school enrolment (1960, 1965 and 1970) and corresponding average annual growth rates

Country	Primary school enrolment			Average annual growth rate (%)	
	1960	1965	1970	1960/65	1965/70
Upper Volta	56,598	89,694	105,706	9.6	3.3
Mali	64,801	148,914	203,703	18.1	6.5
Mauritania	11,279	20,433	31,500	12.6	9.0
Niger	26,609	61,948	88,594	18.4	7.4
Senegal	128,755	218,795	264,000	11.2	3.8
Chad	74,167	163,962	157,794	17.2	-0.8

Source: UNESCO, Regional Office - Dakar.

Table A_3 - Primary education: attendance rate 1970

Country	Theoretical age group	Population of theoretical age group (A)	Total enrolment (all ages) (B)	Enrolment from theoretical age group (C)	Attendance rate	
					Gross B/A	Net C/A
Upper Volta	7-12	846,800	105,706	85,939	13	10
Mali	7-12	785,300	203,703	148,073	26	19
Mauritania	7-13	197,000	31,500	23,027	16	12
Niger	7-12	586,800	88,594	70,875	15	12
Senegal	6-11	630,800	264,000	205,920	42	33
Chad	7-12	539,500	157,794	111,560	29	21

Source: Regional Office, UNESCO, Dakar.

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Table A_4 - First year of primary education: enrolment and average annual growth rates

Country	Enrolment in the first year of primary education			Average annual growth rates (%)	
	1960 (or 1961)	1965	1970 (or 1969)	1960/65 (or 61-65)	1965/70 (or 65-69)
Upper Volta	...	22,914	24,302	...	1.5
Mali	19,401	38,187	57,368	14.5	8.5
Mauritania	3,952	5,602	6,780	7.4	3.9
Niger	9,202	17,566	21,827	13.8	4.4
Senegal	34,805	45,427	49,882	5.5	2.4
Chad	37,768	73,840	59,390	14.3	-5.6

Source: UNESCO, Regional Office for Education in Africa - Dakar.

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Table A_5 - Secondary education

Number of pupils enrolled in the various types of secondary school

		Total Secondary	General secondary schools	Technical secondary schools	Teacher-training secondary schools
Chad	60	1,901	1,400	399	102
	65	6,913	5,294	793	826
	69	9,911	8,504	903	504
Mali	60	4,636	3,016	678	942
	65	3,176	1,011	1,417	748
	70	8,444	3,507	3,386	1,551
Mauritania	60	554	525	-	29
	64	1,684	1,380	197	107
	68	3,186	2,733	159	294
Niger	60	1,420	917	61	442
	65	3,419	2,562	441	416
	70	5,274	4,946	328	548
Senegal	60	12,422	8,713	2,867	842
	65	34,644	25,574	8,244	826
	69	55,212	48,226	6,445	541
Upper Volta	60	2,955	1,480	625	850
	65	8,295	5,468	1,543	1,284
	70	10,724	8,810	1,577	337

Source: UNESCO Statistical Yearbook (1972).

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Table A_6 - Higher education

Number of students enrolled in universities or major institutions of higher education

States	Number of students		
	1960	1965	1970
Chad	-	-	-
Mali	-	139	731
Mauritania	-	-	-
Niger	-	-	-
Senegal	1,391	2,790	3,049 (1969)
Upper Volta	-	28	183

Source: UNESCO Statistical Yearbook (1972).

N.B. The figures in this table refer only to students studying in the three countries mentioned and do not include students studying abroad.

Table A_7 - Comparative classification of the six Sahelian countries according to the secondary/primary ratio and the share of senior secondary in secondary education

Country	Secondary/ primary ratio 1969/70	Country	Share of senior secondary in secondary education 1969/70
Mali	22.3	Upper Volta	16.3
Senegal	19.2	Mauritania	11.8
Mauritania	10.4	Senegal	11.7
Upper Volta	8.1	Chad	11.7
Niger	6.6	Mali	6.9
Chad	5.4	Niger	4.9

Source: IEDES.

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Table A_8 - Percentages of national budgets devoted to educational expenditure in 1970

Country	Percentage
Upper Volta	24.1
Mali	25.6 1/
Niger	15.0 2/
Chad	11.6 3/
Mauritania	22.0
Senegal	25.5

Sources: Various expert studies.

1/ This percentage is rising and amounted to 30 per cent in 1971/72.

2/ This percentage is rising very sharply: 22 per cent in 1972.

3/ This percentage is rising: 15 per cent in 1971.